IS 4624 (1978): Dehydrated Peas [FAD 10: Processed Fruits and Vegetable Products]

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Indian Standard

SPECIFICATION FOR DEHYDRATED PEAS

(First Revision)

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

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Indian Standard

SPECIFICATION FOR DEHYDRATED PEAS

(First Revision)

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AMENDMENT NO. 1 JUNE 1996
TO
IS 4624 : 1978 SPECIFICATION FOR DEHYDRATED PEAS

(First Revision)

(*Page* 3, *Foreword, clause* 0.4) — Insert the following new clause after 0.4 and renumber the subsequent clause:

'0.5 A scheme for labelling environment friendly products known as ECO-Mark has been introduced at the instance of the Ministry of Environment and Forests (MEF), Government of India. The ECO-Mark shall be administered by the Bureau of Indian Standards (BIS) under the *BIS Act*, 1986 as per the Resolution No. 71 dated 20 February 1991 and Resolution No. 425 dated 28 October 1992 published in the Gazette of the Government of India. For a product to be eligible for marking with the ECO-Mark it shall also carry the Standard Mark of BIS for quality besides meeting additional environment friendly (EF) requirements. The environment friendly requirements for dehydrated peas are, therefore, included through Amendment No. 1 to this standard.

This amendment is based on the Gazette Notification No. 624 (E) dated 6 September 1995 for Labelling Beverages, Infant Foods, Processed Fruits and Vegetable Products as Environment Friendly, published in the Gazette of the Government of India.'

(*Page* 4, *clause* 3.2.5) — Insert the following new matter after 3.2.5:

"3.3 Additional Requirements for ECO-Mark

3.3.1 *General Requirements*

3.3.1.1 The product shall conform to the requirements prescribed under 3.1 to 3.2.5.

3.3.1.2 The manufacturer shall produce the consent clearance as per the provisions of *Water (PCP) Act*, 1974, *Water (PCP) Cess Act*, 1977 and *Air (PCP) Act*, 1981 along with the authorization if required under *Environment (Protection) Act*, 1986 and the Rules made thereunder to the Bureau of Indian Standards while applying for the ECO-Mark and the product shall also be in accordance with the *Prevention of Food Adulteration Act*, 1954 and the Rules

made thereunder. Additionally, FPO 1955 (Fruit Product Order) framed under *Essential Commodities Act*, 1955, *Standards of Weights and Measures Act*, 1977 requirements wherever applicable has to be complied with.

3.3.1.3 The product/packaging may also display in brief the criteria based on which the product has been labelled environment friendly.

3.3.1.4 The material used for product/packing shall be recyclable or biodegradable.

3.3.1.5 The date of manufacture and date of expiry shall be declared on the product/package by the manufacturer.

3.3.1.6 The product shall be microbiologically safe when tested as per IS 5403 : 1969 'Method for yeast and mould count of foodstuffs' and IS 5887 (Part 5) : 1976 'Methods for detection of bacteria responsible for food poisoning : Part 5 Isolation, identification and enumeration of *Vibrio Cholerae* and *Vibrio Parahaemolyticus* (*first revision*)' and shall be free from bacterial and fungal toxins.

3.3.1.7 The pesticide residues, if any in the product shall not exceed the limit as prescribed in *PFA Act*, 1954 and the Rules made thereunder.

3.3.1.8 The product/package or leaflet accompanying it may display instructions of proper use, storage and transport (including refrigeration temperature compliance) so as to maximize the product performance, safety and minimize wastage.

3.3.2 *Specific Requirements*

3.3.2.1 The product shall not contain any of the heavy metal contaminants in excess of the quantities prescribed in Table 2.

TABLE 2 LIMITS FOR HEAVY METALS

Sl.No.	Metals	Limits	Test Method, Ref to IS 2860 : 1964
i)	Arsenic, mg/kg, *Max*	1	13
ii)	Lead, mg/kg, *Max*	10	14
iii)	Copper, mg/kg, *Max*	30	15
iv)	Zinc, mg/kg, *Max*	19	16
v)	Tin, mg/kg, *Max*	250	17

*Methods of sampling and test for processed fruits and vegetables.

(*Page* 5, *clause* 4.2.1) — Insert the following clause after 4.2.1:

'4.3 ECO-Mark

The product may also be marked with the ECO-Mark, the details of which may be obtained from the Bureau of Indian Standards.'

(FAD 10)

Reprography Unit, BIS, New Delhi, India

Indian Standard

SPECIFICATION FOR DEHYDRATED PEAS

(First Revision)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 31 January 1978, after the draft finalized by the Fruits and Vegetables Sectional Committee had been approved by the Agricultural and Food Products Division Council.

0.2 Dehydrated peas are gaining popularity because of their culinary quality, palatability and convenience of storage and transport. Besides, surplus peas during glut season can be dehydrated and used during off season. Dehydrated peas are now being extensively used in the country and there is a scope for developing our export trade. Therefore, to ensure production of dehydrated peas of a uniform and known quality, this standard is being prepared and it is expected to help in exercising proper quality control.

0.3 Dehydrated peas is the product prepared by dehydrating under controlled conditions, the seeds of suitable varieties of fresh peas of proper maturity after washing, preparing, grading, blanching and sulphiting. Processing is done in a manner which ensures effective retention of colour, flavour, texture, taste and food value.

0.4 This standard was first published in 1968. In this revision limits of preservatives have been modified. The revision specifies additional requirements for total ash and acid insoluble ash. It gives more details of method of test for rehydration ratio and reconstitution. It also incorporates Amendment No. 1 issued to the standard.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Rules for rounding off numerical values (*revised*).

1. SCOPE

1.1 This standard prescribes the requirements and the methods of sampling and test for dehydrated peas.

2. TERMINOLOGY

2.0 For the purpose of this standard, the following definitions shall apply.

2.1 Discoloured Pea-Grains — Dehydrated pea-grains which do not have the characteristic pale green to dark green colour.

2.2 Rehydration Ratio — Ratio of the mass of the dehydrated material after cooking and draining off excess water to its mass before cooking.

3. REQUIREMENTS

3.1 Raw Material — Dehydrated peas shall be prepared from pea-grains obtained from peas-in-pods (*Pisum sativum* Linn.). The pea-grains shall be fresh, green or dark green in colour, of a suitable variety, appropriate maturity, tender and free from disease, insect infestation, frost bite or hail injury.

3.2 End Product

3.2.1 Dehydrated peas shall be pale green to dark green in colour. They shall have the characteristic odour of dehydrated peas and shall be free from scorched, musty or other objectionable odour.

3.2.2 The proportion of pieces of pods in dehydrated peas shall not exceed 0·5 percent by mass. Loose skin, bare cotyledons and discoloured pea-grains when present shall not exceed 3 percent by mass of which discoloured pea-grains alone shall not be more than one percent.

3.2.3 Dehydrated peas shall be free from moulds, insect infestation, rodent excreta and any chemical preservative other than sulphite, carbonate and magnesium salt. The dehydrated peas shall be also free from case hardening.

3.2.4 Dehydrated peas shall also conform to the requirements given in Table 1.

3.2.5 *Reconstitution* — Dehydrated peas shall reconstitute to a satisfactory boiled product when one part by mass of the peas are cooked (simmered) in fifteen parts by mass of one percent sodium chloride solution for 20 minutes. The time taken for cooking shall be the time taken from the start of boiling (simmering). The reconstituted peas shall possess tender texture, shall be crisp, practically free from mushiness and shall have a typical taste, flavour and colour of cooked fresh peas.

TABLE 1 REQUIREMENTS FOR DEHYDRATED PEAS

(*Clauses* 3.2.4 *and* 6.1)

Sl No.	Characteristic	Requirement	Method of Test, Ref to Appendix
(1)	(2)	(3)	(4)
i)	Moisture, percent by mass, *Max*	6·0	A
ii)	Sulphur dioxide, mg/kg	300 to 1 500	B
iii)	Peroxidase test	Negative	C
iv)	Rehydration ratio, *Min*	3·0 : 1·0	D
v)	Total ash, percent by mass, *Max*	5	E
vi)	Acid insoluble ash, percent by mass, *Max*	0·5	F

4. PACKING AND MARKING

4.1 Packing — Dehydrated peas shall be packed in clean, sound, moisture-proof containers made of tinplate, laminated foils or of any other suitable material which would prevent the uptake of moisture.

4.2 Marking — Each container shall be marked or labelled with the following particulars:

a) Name of the material,

b) Name and address of the manufacturer,

c) Net mass,

d) Declaration to the effect that permitted preservatives have been used,

e) Batch or code number indicating the date of manufacture, and

f) Manufacturer's licence number.

4.2.1 The product may also be marked with Standard mark.

4.3 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act*, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

5. SAMPLING

5.1 Representative samples of the material for testing conformity to this specification shall be drawn according to the method given in Appendix G.

6. TESTS

6.1 Tests shall be carried out as prescribed in the relevant appendices specified in col 4 of Table 1.

APPENDIX A

[*Table* 1, *Item* (i)]

DETERMINATION OF MOISTURE

A-1. PREPARATION OF THE SAMPLE

A-1.1 Grind about 10 g of the sample so that it passes through 250-micron IS sieve (aperture 0·250 mm) (*see* IS : 460-1962*). If 250-micron IS sieve is not available, use ASA test sieve 250 mm (same as the ASTM test sieve) or BS test sieve 60 or Tyler test sieve 60. Transfer this prepared sample to a well-stoppered glass bottle. Use this material for analysis.

A-2. PROCEDURE

A-2.1 Weigh accurately about 5 g of the ground material (*see* **A-1.1**) in a tared dish having a diameter of at least 50 mm and depth of about 20 mm. Shake the dish until the contents are evenly distributed. Place the dish in an air-oven maintained at 105 ± 2°C and dry for at least 2 hours. Cool in a desiccator and weigh. Repeat the process of heating, cooling and weighing until the difference between two successive weighings is less than 1 mg. Note the lowest mass.

A-3. CALCULATION

A-3.1 Moisture, percent by mass = $\frac{100\,(M_1 - M_2)}{M_1 - M}$

where

M_1 = mass in g of the dish with the material before drying,

M_2 = mass in g of the dish with the dried material, and

M = mass in g of the empty dish.

*Specification for test sieves (*revised*).

APPENDIX B

[*Table* 1, *Item* (ii)]

DETERMINATION OF SULPHUR DIOXIDE

B-1. APPARATUS

B-1.1 The apparatus, assembled as shown in Fig. 1, may be used. The apparatus consists of a round-bottom resistance glass flask of 750-ml capacity (*C*) fitted with a three-holed rubber stopper *D*. The rubber stopper *D* is fitted with the delivery tube *B*, the dropping funnel *E* and the sloping, water-cooled reflux condenser *F* the lower end of which is cut off at an angle. The free end of the delivery tube *B* is connected to the wash bottle *A* containing sodium carbonate solution. The upper end of the reflux condenser *F* is connected to the delivery tube *H* by the rubber stopper *G*. The free end of the delivery tube *H* nearly reaches the bottom of the 100-ml Erlenmeyer flask *J* containing 25 ml of hydrogen peroxide solution. The Erlenmeyer flask *J* is provided with a two-holed rubber stopper; through one hole passes the delivery tube *H* and, through the other, tube *K*. The free end of the tube *K* is connected to the Peligot tube *L* containing 5 ml of hydrogen peroxide solution.

B-2. REAGENTS

B-2.1. Sodium Carbonate Solution — 10 percent (*m/v*), aqueous.

B-2.2 Bromophenol Blue Indicator Solution — Dissolve 0·1 g of bromophenol blue in 3·0 ml of 0·05 N sodium hydroxide solution and 5 ml of ethyl alcohol (90 percent by volume) by warming gently. Make up the volume of the solution with ethyl alcohol (20 percent by volume) to 250 ml in a graduated flask.

B-2.3 Hydrogen Peroxide Solution — Dilute a 30 percent (*m/v*) hydrogen peroxide solution with about twice its volume of water and neutralise the free sulphuric acid that may be present in the hydrogen peroxide solution with barium hydroxide solution, using bromophenol blue indicator solution. Allow the precipitate of barium sulphate to settle, filter and determine the concentration of hydrogen peroxide in the filtrate by titrating it with standard potassium permanganate solution. Dilute the filtrate with cold water so as to obtain a 3 percent (*m/v*) solution of hydrogen peroxide.

B-2.4 Concentrated Hydrochloric Acid — sp gr 1·16.

B-2.5 Carbon Dioxide Gas — from a cylinder.

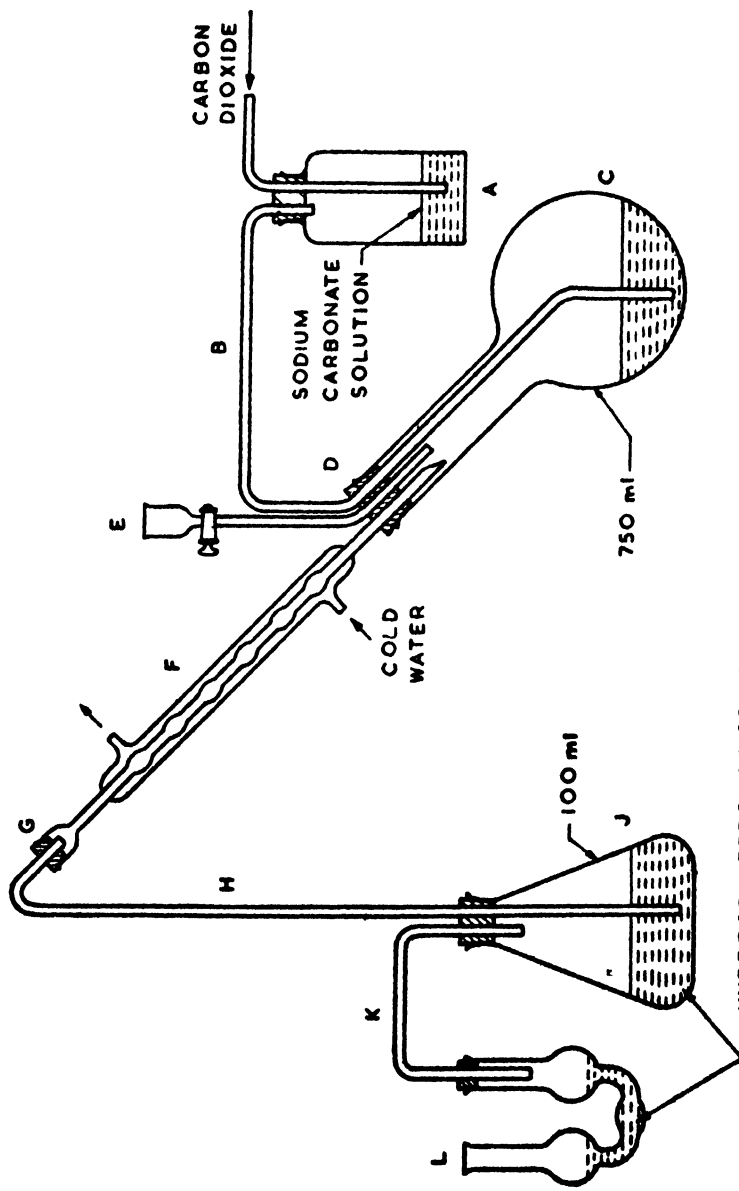

FIG. 1 ASSEMBLY OF APPARATUS FOR THE DETERMINATION OF SULPHUR DIOXIDE

B-2.6 Standard Sodium Hydroxide Solution — 0·1 N standardized at the time of the experiment, using bromophenol blue indicator solution.

B-3. PROCEDURE

B-3.1 With 25 ml of hydrogen peroxide solution in the Erlenmeyer flask (*J*) and 5 ml in the Peligot tube (*L*) assemble the apparatus as shown in Fig. 1. Introduce into the flask (*C*), 300 ml of water and 20 ml of concentrated hydrochloric acid through the dropping funnel (*E*). Run a steady current of cold water through the condenser (*F*). To expel air from the system, boil the mixture contained in the flask (*C*) for a short time in a current of carbon dioxide gas previously passed through the wash bottle (*A*). Weigh accurately about 25 g of the material and dissolve it in the minimum quantity of water. Introduce this solution into the flask (*C*) through the dropping funnel (*E*). Wash the dropping funnel with a small quantity of water and run the washing into the flask (*C*). Distil the mixture contained in the flask (*C*) in a slow current of carbon dioxide gas [passed previously through the wash bottle (*A*)] for one hour. Just before the end of distillation stop the flow of water in the condenser (this causes the condenser to become hot and drives off the residual traces of sulphur dioxide retained in the condenser). When the delivery tube (*H*), just above the Erlenmeyer flask (*J*), becomes hot to touch, disconnect the stopper (*G*) immediately. Wash the delivery tube (*H*) and the contents of the Peligot tube (*L*) with water into the Erlenmeyer flask (*J*). Cool the contents of the Erlenmeyer flask to room temperature, add a few drops of bromophenol blue indicator solution and titrate with the standard sodium hydroxide solution. (Bromophenol blue is unaffected by carbon dioxide and gives a distinct colour change in cold hydrogen peroxide solution.)

B-3.2 Carry out a blank determination, using 20 ml of concentrated hydrochloric acid diluted with 300 ml of water.

B-4. CALCULATION

B-4.1 Sulphur dioxide content of the material, mg/kg $= \dfrac{32\,000\,(V - v)\,N}{M}$

where

V = volume in ml of the standard sodium hydroxide solution required for the test with the material,

v = volume in ml of the standard sodium hydroxide solution required for the blank determination,

N = normality of the standard sodium hydroxide solution, and

M = mass in g of the material taken for the test.

APPENDIX C

[*Table* 1, *Item* (iii)]

PEROXIDASE TEST

C-1. REAGENTS

C-1.1 Guaiacol Solution — One percent, prepared by dissolving one gram of 0·9 ml guaiacol in 50 ml ethyl alcohol and adding 50 ml water.

C-1.2 Hydrogen Peroxide — One percent. Dilute, one part of three percent hydrogen peroxide with two parts of water.

C-2. PROCEDURE

C-2.1 Take 25 g of the material and coarsely powder it. Place 5 g of the material on a white porcelain saucer or evaporating dish. Add enough guaiacol solution to wet all the cut surfaces, then immediately add a similar amount of hydrogen peroxide solution. At the end of three minutes note whether a reddish-brown colour has developed. If none is observed the test for peroxidase is negative. Neglect any colour that may develop after 3 minutes.

APPENDIX D

[*Table* 1, *Item* (iv)]

DETERMINATION OF REHYDRATION RATIO

D-1. PROCEDURE

D-1.1 Cook (simmer) in a beaker one part by mass of dehydrated peas in ten parts by mass of one percent sodium chloride solution for 20 minutes and then allow them to cool at room temperature for 45 minutes. The time taken for cooking shall be the time taken from the start of boiling (simmering). Drain off excess solution by covering the beaker with watch glass with convex surface and inverting the container for five minutes. Weigh cooled material.

D-2. CALCULATION

D-2.1 Rehydration ratio = $MR : MD$

where

MR = mass of reconstituted dehydrated peas, and

MD = mass of dehydrated material before cooking.

APPENDIX E

[*Table* 1, *Item* (v)]

DETERMINATION OF TOTAL ASH

E-1. PROCEDURE

E-1.1 Weigh accurately about 2 g of the material in a tared porcelain, silica or platinum dish. Ignite with the flame of a burner for about one hour. Complete the ignition by keeping in a muffle furnace at 600 ± 20°C until grey ash results. Cool in a desiccator and weigh. Ignite the dish again in the muffle furnace for 30 minutes, cool and weigh. Repeat this process until the difference in mass between two successive weighings is less than 1 mg. Note the lowest mass.

E-1.2 Reserve the dish containing this ash for the determination of acid insoluble ash (*see* **F-2.1**).

E-2. CALCULATION

E-2.1 Total ash (on moisture-free basis), percent by mass $= \frac{100\,(M_2 - M)}{(M_1 - M)}$

where

M_2 = the lowest mass in g of the dish with the ash,

M = mass in g of the empty dish, and

M_1 = mass in g of the dish with the dried material taken for the test.

APPENDIX F

[*Table* 1, *Item* (vi)]

DETERMINATION OF ACID INSOLUBLE ASH

F-1. REAGENT

F-1.1 Dilute Hydrochloric Acid — approximately 5 N, prepared from concentrated hydrochloric acid.

F-2. PROCEDURE

F-2.1 To the ash contained in the dish (*see* **E-1.2**), add 25 ml of dilute hydrochloric acid; cover with a watch-glass and heat on a water-bath for 10 minutes. Allow to cool and filter the contents of the dish through a Whatman filter paper No. 42 or its equivalent. Wash the filter paper with water until the washings are free from the acid and return it to the dish. Keep it in an electric air-oven maintained at $135 \pm 2°C$ for about 3 hours. Ignite it in a muffle furnace at $600 \pm 20°C$ for one hour. Cool the dish in a desiccator and weigh. Ignite the dish again in the muffle furnace for 30 minutes, cool and weigh. Repeat this process until the difference in mass between two successive weighings is less than 1 mg. Note the lowest mass.

F-3. CALCULATION

F-3.1 Acid insoluble ash (on moisture-free basis), percent by mass $= \frac{100\,(M_2 - M)}{M_1 - M}$

where

M_2 = the lowest mass in g of the dish with the acid insoluble ash,

M = mass in g of the empty dish, and

M_1 = mass in g of the dish with the dried material (*see* M_1 in **E-2.1**).

APPENDIX G

(*Clause* 5.1)

SAMPLING OF DEHYDRATED PEAS

G-1. GENERAL REQUIREMENTS OF SAMPLING

G-1.0 In drawing and handling test samples, care shall be taken that the properties of the sample and the material being sampled are not affected. The precautions and directions given in **G-1.1** and **G-1.2** shall be observed.

G-1.1 Samples shall be taken in a place where samples have protection against extraneous strains and pressures.

G-1.2 Sampling shall be done by a person agreed to between the purchaser and the vendor and, if desired by any one of them, in the presence of the purchaser (or his representative) and the vendor (or his representative).

G-2. SCALE OF SAMPLING

G-2.1 Lot — In a single consignment all the containers belonging to the same batch of manufacture shall be grouped together to constitute a lot.

G-2.1.1 For ascertaining conformity of the material in the lot to the requirements of the specification, samples shall be tested from each lot separately.

G-2.2 The number of containers to be selected from a lot, for this purpose, shall depend on the size of the lot and shall be in accordance with Table 2.

TABLE 2 SCALE OF SAMPLING

No. of Containers in the Lot	Sample Size
(1)	(2)
Up to 100	3
101 „ 300	5
301 „ 500	8
501 „ 1 000	13
1 001 and above	20

G-2.2.1 The containers shall be chosen at random from the lot and for this purpose, a random number table shall be used. In case such a table is not available, the following procedure shall be adopted:

Count the containers in one order as 1, 2, 3,....., etc, up to r and so on. Every rth container so counted shall be withdrawn, r being the integral part of N/n, where N is the total number of containers in the lot, and n number of containers to be chosen.

NOTE — For details of this procedure as well as other methods of random selection, reference may be made to IS : 4905-1968*.

G-3. NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

G-3.1 An individual test sample shall be prepared from each of the containers selected according to **G-2.2** and tested for all the requirements given in the specification.

G-3.2 The lot shall be declared as conforming to the requirements of the specification, if all the test results on each of the individual test samples satisfy the relevant requirements given in the specification.

*Methods for random sampling.

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‡Peenya Industrial Area, 1st Stage, Bangalore-Tumkur Road, BANGALORE 560058	839 49 55
Gangotri Complex, 5th Floor, Bhadbhada Road, T.T. Nagar, BHOPAL 462003	55 40 21
Plot No. 62-63, Unit VI, Ganga Nagar, BHUBANESHWAR 751001	40 36 27
Kalaikathir Buildings, 670 Avinashi Road, COIMBATORE 641037	21 01 41
Plot No. 43, Sector 16 A, Mathura Road, FARIDABAD 121001	8-28 88 01
Savitri Complex, 116 G.T. Road, GHAZIABAD 201001	8-71 19 96
53/5 Ward No.29, R.G. Barua Road, 5th By-lane, GUWAHATI 781003	54 11 37
5-8-56C, L.N. Gupta Marg, Nampally Station Road, HYDERABAD 500001	20 10 83
E-52, Chitaranjan Marg, C- Scheme, JAIPUR 302001	37 29 25
117/418 B, Sarvodaya Nagar, KANPUR 208005	21 68 76
Seth Bhawan, 2nd Floor, Behind Leela Cinema, Naval Kishore Road, LUCKNOW 226001	23 89 23
NIT Building, Second Floor, Gokulpat Market, NAGPUR 440010	52 51 71
Patliputra Industrial Estate, PATNA 800013	26 23 05
Institution of Engineers (India) Building 1332 Shivaji Nagar, PUNE 411005	32 36 35
T.C. No. 14/1421, University P. O. Palayam, THIRUVANANTHAPURAM 695034	6 21 17

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*Sales Office is at 5 Chowringhee Approach, P.O. Princep Street, CALCUTTA 700072	27 10 85
†Sales Office is at Novelty Chambers, Grant Road, MUMBAI 400007	309 65 28
‡Sales Office is at 'F' Block, Unity Building, Narasimaraja Square, BANGALORE 560002	222 39 71

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